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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/617,252

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Kwang-ryul Kim

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EXAMINER

VO, ANH T N

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/617,252

Applicant(s)

KIM ET AL.

Examiner

Anh T.N. Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 6-8, 10-14 and 16-26 is/are pending in the application.
- 4a) Of the above claim(s) 20-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8, 10-14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

NON-FINAL REJECTION

Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/01/06 has been entered.

The rejection over Akhavain et al (US 6,543,880) is withdrawn in view of the amendments to the claims.

Claim Objection

Claims 6-8 are objected to because they depend on canceled claim 2. Correction is required.

Claim Rejection

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 6-8, 10-14 and 16-19 are rejected under 354 U.S.C. 103(a) as being unpatentable over Patil et al. (US Pat. 6,425,655) in view of Nakamura (US 6,211,936) and further in view of Asano (US 6,396,665).

Patil discloses in Figures 1-3 an ink jet pen comprising:

- a substrate (14) which includes ink chamber where ink is stored, nozzles (18) through which ink in the ink chamber is ejected, and a plurality of pads (38) which apply an electrical signal to the substrate to generate droplets in the ink chamber (Figures 1-2);
- a flexible printed circuit (FPC) cable (26) which includes a conductor (32) and a protection layer (26) made of polyimide films, see lines 5, column 3, corresponding to each of the pads (38), each conductor having bonding portions (36) at front ends thereof;
- connection members (40) which electrically connect the pads (38) to the bonding portions (36) (Figure 3); and
- an insulating connection ribbon to fix the plurality of connection members (40) in a parallel arrangement (Figure 2).

However, Patil et al does not disclose that the FPC has an opening on the protecting layer (26) through which the bonding portions are exposed in the protection layer and the opening creates a notch for permitting the hot pressure welding of the conductor and the bonding portions. For example, the protecting layer portion around the bonding portion (pads 36) of the conductor (32) is complete removed as shown in Figure 3 of Patil et al instead of partially removed as claimed.

Nakamura (US 6,211,936) suggests in Figure 7 a flexible printed circuit (FPC 61) comprising a protecting layer (4, 6) and a conductor (3) which is bonded to a terminal (15) on a substrate (11) by using a hot press tool (21) for preventing the FPC from broken, see lines 56-65, column 1.

Asano discloses in Figures 7 and 11A-11C a FPC includes a protection layer (80, 82) for protecting a conductor (76), an opening (84) through which the bonding portions (67, 68) are exposed in the protection layer (80, 82) for allowing heat to be directly applied to the conductor during soldering, see lines 1-6, column 3.

It would have been obvious to a person having skill in the art at the time the invention was made to employ the protecting layer and bond the connector of Patil to the connector member by using the hot pressure welding as suggested by Nakamura for the purpose of preventing the FPC from broken and incorporate suggestion of the opening on the protecting layer of Patil as suggested by Asano for the purpose of allowing heat to be directly applied to the conductor during soldering preventing the FCB from damage by heat or pressure. Noted that, although Asan does not specify that the opening (84) is a notch; however, a skill artisan realizes that the opening (84) can be shaped as a notch for enhancing the FCB protection during welding or soldering. Lacking of showing any criticality, it would have been obvious to a person having skill in the art at the time the invention was made to employ the notches on the protecting layer of Patil et al for the purpose of enhancing the FBC protection during heating.

Claims 1, 6-8, 10-14 and 16-19 are rejected under 354 U.S.C. 103(a) as being unpatentable over Komuro et al (US 4,873,622) in view of Nakamura (US 6,211,936) and further in view of Asano (US 6,396,665).

Komuro et al. disclose in Figures 4-5 a liquid inkjet recording head comprising:

- a substrate (21), which includes an ink chamber (24) where ink is stored, nozzles (25) through which ink in the ink chamber is ejected, and a plurality of pads (unmarked pads is located at an element 26), which apply an electrical signal to the substrate to generate droplets in the ink chamber (Figure 5);
- a flexible printed circuit (FPC) cable which includes a conductor (19) corresponding to each of the pads, each conductor having bonding portions (unmarked portion that connects between two elements 27 and 19) at front ends thereof; and

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- connection members (27), which electrically connect the pads to the bonding portions (Figure 5).

However, Komuro et al does not disclose that the FPC has a protecting layer and an opening through which the bonding portions are exposed in the protection layer and the opening creates a notch for permitting the hot pressure welding of the conductor and the bonding portions.

Nakamura (US 6,211,936) suggests in Figure 7 a flexible printed circuit (FPC 61) comprising a protecting layer (4, 6) and a conductor (3) which is bonded to a terminal (15) on a substrate (11) by using a hot press tool (21) for preventing the FPC from broken, see lines 56-65, column 1.

Asano discloses in Figures 7 and 11A-11C a FPC includes a protection layer (80, 82) for protecting a conductor (76), an opening (84) through which the bonding portions (67, 68) are exposed in the protection layer (80, 82) for allowing heat to be directly applied to the conductor during soldering, see lines 1-6, column 3.

It would have been obvious to a person having skill in the art at the time the invention was made to employ the protecting layer and bond the connector of Komuro to the connector member by using the hot pressure welding as suggested by Nakamura for the purpose of preventing the FPC from broken and incorporate suggestion of the opening on the protecting layer of Komuro et al as suggested by Asano for the purpose of allowing heat to be directly applied to the conductor during soldering preventing the FCB from damage by heat or pressure. Noted that, although Asano does not specify that the opening (84) is a notch; however, a skill artisan realizes that the opening (84) can be shaped as a notch for enhancing the FCB protection during welding or soldering. Lacking of showing any criticality, it would have been obvious to a person having skill in the art at the time the invention was made to employ the notches on the protecting layer of Komuro et al for the purpose of enhancing the FBC protection during heating.

Response to Applicant's Arguments

The applicant argues that Patil et al and Kumoro et al do not disclose the claimed hot pressure welding and the FPC includes a protection layer. The argument is not persuasive because employing hot pressure welding and a protective layer is suggested in Nakamura reference as stated above.

The applicant argues that it is not obvious to modify Kumoro et al or Patil et al in view of Asano. The argument is not persuasive because the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). For example, Patil et al discloses an ink pen in Figure 3 comprising a flexible circuit board and a chip (34). The conductor (32) of the FBC is connected to a chip (34) by a connector member (40). However, Patil et al does not disclose that the connector member (40) connects the conductor (32) through an opening by hot pressure welding. Asano suggests in Figures 11A-11C to employ an opening (84) on a protecting layer (60) for allowing heat to be applied directly to the conductor during soldering. Since the opening can be used, one skilled artisan would be motivated to employ the opening as suggested by Asano in the FBC of Patil et al for the purpose of allowing the heat to be applied directly to the conductor.

CONCLUSION


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo. whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M. to 7:00 P.M.

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The fax number of this Group 2861 is (571) 273-8300.



ANH T.N. VO
PRIMARY EXAMINER
March 8, 2006